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UNITED STATES DEPARTMENT OF AGRICULTURE  
Rural Electrification Administration  
Washington 25, D. C.

October 1962  
Letter No. 30

TELEPHONE ENGINEERING INFORMATION

These information letters are intended to provide a means for answering questions that arise in the field and to inform the field of new developments. They are not intended to be instructions nor to replace in any respect the approved channels for establishing requirements and procedures.

T E and C M Sections Distributed Since Letter No. 29, Dated July 1962

Rev. TE & CM-208, Local Area Numbering Plans and Selector Level Assignments, September 1962

Rev. TE & CM-830, Electrical Protection Assembly Units, September 1962

Rev. TE & CM-625, Open Wire Pole Top Assembly Units, October 1962

Rev. TE & CM-701, Station Installations, October 1962

Rev. TE & CM-626, Staking, October 1962

Rev. TE & CM-805, Subscriber Station Protection, October 1962

Approved V. F. Repeaters. Committee "A" has approved the following V. F. repeaters which will be shown in the October supplement to the "List of Acceptable Materials."

Manufacturers	Negative Resistance	Negative Impedance	Hybrid
Western Electric Company	E-6	E-23	-
ITT Kellogg	KE-6*	-	-
Stromberg-Carlson	-	541	571
Altec-Lansing	-	-	7300A*

\* These items are accepted on a trial basis for a period of one (1) year.

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## Approved Trunk and Subscriber Carrier Equipment

Committee "A" has approved the following trunk and subscriber carrier equipment which will be shown in the October supplement to the "List of Acceptable Materials":

<u>Manufacturer</u>	<u>Trunk Carrier</u>	<u>Subscriber Carrier</u>
Budelman	37C*	16C*, PLC/DR*, 46A*
ITT Kellogg	K-24, K-32	K-31
Lenkurt	45BN, 45A, 45C	FM*
	81A, 33A*, 32E*	T-FM*
	FM*, T-FM*	
Lynch	B-37*, B-60J*, B-121	B-120
	B-500, B-510, B-630	
	B-650	
North	NT101*	NS101*, NS102*
Panhandle	X	X
Stromberg-Carlson	SC 565	SC 561, SC 661
Western Electric Company	O, N, ON	

Notes: The SC 661 carrier is accepted on a trial basis for a period of one year.

The asterisks at certain of the above carrier code numbers indicate that they fail to meet REA specifications in one or more of the following requirements:

1. Voice frequency response
2. Voice terminal impedance
3. Voice pass filter losses

None of these requirement failures are serious enough to exclude the designated carriers from the "List".

REA Splicing Specification PC-2. This specification was distributed in October 1962 as an attachment to REA Bulletin 345-6, dated September 7, 1962. It is the REA standard for "Splicing and Terminating Plastic-Insulated, Plastic-Jacketed Cables used on Telephone Systems of REA Borrowers."

Impedance Compensators. REA TE & CM-431, Issue 2, which is now being printed, includes in Figure 1 the final form of the configuration for Impedance Compensators manufactured in accordance with REA specification PE-31. It will be noted that the circuits to which these compensators can be applied must be all of one gauge, where the loading is D-66 in one direction from the compensator and H88 in the other direction, and also that they cannot be applied to loaded distribution wire circuits.



Educational Television (ETV). Congress passed an amendment to Section 203A of the Rural Electrification Act of 1936 (as amended) broadening the definition of telephone service. It will permit REA loans for ETV, and it has been signed by the President. TSD staff engineers are gathering material and information about the transmission and distribution of ETV to schools which are in the franchise area of REA borrowers.

The methods for supplying educational TV to schools are governed by State education departments. Some States are in the process of constructing UHF TV broadcasting stations at strategic locations and feeding the programs from educational centers to those stations by microwave. Under this setup REA borrowers may be called upon to furnish master antennas and coaxial cable distribution systems to schools located within the broadcast range of the UHF TV transmitter.

Another concept which is being implemented in South Carolina is that of transmitting the program material from a central program studio via microwave to points where it is connected to coaxial cables, which by means of repeaters spaced about 4000 feet apart, can transmit within a radius of 30 to 40 miles from the microwave receiver.

Under present plans the educational authorities will supply the TV receivers for the school rooms. These are identical with those used in homes.

TWX Teletypewriter Service. The item on this subject in the July 1962 Information Letter No. 29 states that conversion from 60 to 100 words per minute would be made on a progressive basis. Later information indicates that a simultaneous conversion will be made at a later date which has not yet been announced.

Mobile Dial Radio. The General Electric Company and Motorola mobile dial radio equipment still are the only types approved by REA. Kellogg, which has four systems operating in REA borrowers' service and Lenkurt which has three systems in such service, are awaiting REA approval.

Figure 8 Cable Specifications will be submitted to Committee "A" for approval in November. An addendum to REA Form 511 is in preparation covering the construction practices for this cable. Addenda are planned for TE & CM-630, "Design of Aerial Cable Plant" and TE & CM-635, "Construction of Aerial Cable Plant" covering the Figure 8 Cable Use.

Laminated Fiberglas Pedestals. A laminated Fiberglas pedestal for buried plant is being evaluated. It may be found suitable for all climates. It is light, about as strong as steel, and is corrosion resistant. It is neat in appearance, the material being colored green before molding.

New Buried Service Wire. A design of wire for buried service drop is under study. It is expected to have a spiraled bronze shield, copper-covered steel conductors, polyvinyl or polyethylene insulation, and a polyvinyl jacket.

Subscriber Line Concentrator. Concentrators are not being considered in situations where they might be economical. An REA TE & CM Section 340, "Use of Line Concentrator" is to be prepared by the TSD Central Office Branch which will discuss their application.

Buried Cable Pressurization. A buried cable project is being pressurized by the Cambridge Telephone Company, Cambridge, Nebraska (Nebraska 541). REA Outside Plant Branch has an observer there during the pressurization installation.

Survey Results Regarding Damage to Electronic Equipment. The results of the postcard survey as of October 18, 1962, indicate a response from 270 borrowers. Of this number, 184 report no damage and 86 report lightning damage to electronic equipment. Concerning the 184 that report no damage, 44 state that they do not have electronic equipment, and 22 state that they do have electronic equipment. Using this as a rule of thumb, more than one-half our borrowers who have electronic equipment do incur annual maintenance expense because of lightning damage to this equipment. The replies volunteered information in addition to the above. These lightning trouble reports included 12 cable troubles, 5 RDW troubles, 2 central office troubles, and an unspecified number of station equipment and other outside plant troubles. This survey confirms previous reports that inadequate protection of certain electronic equipment can be an expensive proposition. REA has now started a program to require electronic equipment to withstand minimum surge tests which should afford REA borrowers an adequate standard of protection for electronic equipment; however, this program will not be completed for some time.

Long Span Insulated Wire. Attenuation and crosstalk tests were made in October on the long span construction in the system of the Boyd County Corporation, Lynch, Nebraska, (Nebraska 525). The tests covered carrier frequencies from 20 to 500 kc. These tests are preliminary to similar tests for comparison which are to be made if and when these wires become ice coated and brought to the ground by the ice load and perhaps snowed in on the ground. An REA TE & CM Section 622, "Design and Construction of Insulated Long Span Plant" will be submitted for printing in November.

Subscriber Carrier Specification 397c. The final version of this specification is delayed to permit inclusion of numerous revisions requested by manufacturers and field engineers. An important addition is to be protection requirements which were requested by several field engineers.



One-party Rural Service. REA is investigating several means for providing one-party rural service at costs which will result in rates acceptable to the customers. Any thoughts field engineers may have on how to provide this service economically will be appreciated by the TSD staff.

Buried Plant Terminal Housings. A draft of a specification for these housings was approved by Committee "A" at its meeting October 18.

Revised Central Office Specifications No. 558a, b, and c have been accepted by Committee "A" and are ready for printing. Important changes included are the 1500 ohm loop requirement, provision in long line adapters for 72 volt operation, and the omission of heat coils on the M.D.F.

Buried Cable Underground Splices Plastic encased splices suitable for both repair jobs and in new construction are being evaluated. These make use of plastics which will not heat up enough to damage polyethylene insulation on conductors which has been a cause of trouble heretofore.

Electronic Equipment Field Trial Periods. REA has notified the manufacturers of electronic equipment that prior to listing, REA will require at least one installation whereby REA engineers will evaluate the actual performance of the equipment over a six-month trial period. Prior to its inclusion in our "List of Acceptable Materials," we will ordinarily limit the quantity of equipment for field trials on REA borrower's systems to that required by five borrowers, each borrower's system being located in a different one of the five Areas. During the first year of listing the new equipment will be identified by an \* to indicate that field experience with the equipment is limited.

